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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,599	08/03/2003	Hung-Hui Ho	REAP0018USA	1598

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EXAMINER	
LUU, MATTHEW	

ART UNIT	PAPER NUMBER
3663	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/604,599	HO ET AL.	
	Examiner	Art Unit	
	LUU MATTHEW	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21-28, 30-38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2003/0234795) in view of Champion et al (6,774,953).

Regarding independent claims 21 and 31, Lee discloses (Fig. 3) a color conversion apparatus for converting an input color being in a first color space (Y, V, U) to an output color being in a second color space (R, G, B), wherein both the input color and the output color include a plurality of color elements, the apparatus comprising:

a first look-up table (LUT) (301) being coupled to a first color element (Y) of the input color for outputting a corresponding first converted color element;

a second LUT (303) being couple to a second color element (V) of the input color for outputting a corresponding second converted color element; and

an adder circuit (Adders- R, G and B) (311, 315 and 317) being coupled to the first LUT (301) and the second LUT (303) for summing the first converted color element and the second converted color element to thereby generate a color element of the output color (R). See sections 51-56.

The only difference between the disclosure of Lee and the claimed invention is that claims 21 and 31 require both of the input color and the output color are in RGB format, instead of (YVU) to (RGB) formats as taught by Lee.

However, Champion discloses (Fig. 2) a conventional color conversion apparatus for converting an input color being in a first color space (R', G', B') (709) to an output color being in a second color space (R' Laser, G' Laser, B' Laser), wherein both the input color and the output color are in (RGB) format.

Champion further discloses (Fig. 3) a first LUT (306), a second LUT (320), and an adder circuit (316) being used in the color conversion apparatus for converting the input color in (R',G', B') format to the output color in (R' Laser, G' Laser, B' Laser) format, wherein both the input color and the output color are in (RGB) format.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the RGB format conversion apparatus with the LUTs and the adder circuit of Fig. 3 of Champion, into the color conversion apparatus of Lee to provide a color conversion apparatus using the look-up-tables (LUTs) to significantly reduce the computation and memory requirements in the color transformation process, as suggested by Champion (Column 2, lines 58-61).

Furthermore, whether converting a (YUV) color format to a (RGB) format, or converting a (RGB) format to another (RGB) format, is an obvious design choice, since

it only depends on the desired types of color reproduction devices being used. For example, different types of color reproduction devices, such as CRT monitor or an LCD display device, will have different color-reproducing characteristics, called color spaces. Therefore, the input color space (RGB or YUV) is only dependent on the input source being used. And the output color space (RGB or YUV) is only dependent on the reproduction devices at the output.

Furthermore, Champion also discloses (Fig. 2) a well-known color conversion apparatus for converting an input color being in a first color space (R', G', B') (709) to an output color being in a second color space (R' Laser, G' Laser, B' Laser), wherein both the input color and the output color are in (RGB) format.

Regarding claims 22 and 32, note the rejection as set forth above with respect to claims 21 and 31.

Lee fails to teach a gamma correction circuit coupled to a third color element of the input color for generating a gamma corrected color element.

However, Champion discloses (Fig. 2) a gamma circuit (Gamma LUT, 208) coupled to all of three-color elements (R, G, B) for generating the gamma corrected color elements (R'L, G'L and B'L). See column 5, lines 13-15; and column 9, lines 50-52.

Therefore, it would have been obvious to a person of ordinary skill in the art to use the gamma correction circuit (208) of the color conversion system of Champion into the color conversion system of Lee to provide the best quality output color elements for the best quality pictures.

Regarding claims 23 and 33, Lee discloses (Fig. 3) the adder circuit (311, 315 and 317) is further coupled to a third color element (U) to thereby generate a temporary color element (any of the R, G and B color components).

Regarding claims 24 and 34, Champion discloses (Fig. 2) a gamma circuit (Gamma LUT, 208) coupled to all of three color elements (R, G, B) for generating the gamma corrected color elements (R'Laser, G'Laser and B'Laser). See column 5, lines 13-15; and column 9, lines 50-52.

Regarding claims 25 and 35, Champion further discloses (Fig. 3) the first LUT (306) maps a plurality of values (308) for the first color element; and the second LUT (320) maps a plurality of values (322) for the second color element (Column 7, lines 17-60).

Regarding claims 26 and 36, Champion discloses (Fig. 4) the output value (second color space) for each element (R, G, B) is calculated using 8 values of the input color space (Column 5, lines 44-54).

Regarding claims 27-28 and 37-38, Champion discloses (Fig. 3) the LUT is indexed using a number of bits of the values of the first color space; The LUT is indexed using the five most significant bits of the values of the first color space (Column 5, lines 50-65).

Regarding claims 30 and 40, Lee discloses (Fig. 1) a LCD device (115).

Claim Rejections - 35 USC § 103

Claims 29 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claims 21 and 31 above, and further in view of Acharya (6,694,061).

Lee fails to disclose a plurality of sub-tables.

However, Acharya teaches the LUTs that have three separate sub-tables (Column 6, lines 35-37).

It would have been obvious to the person of ordinary skill in the art to use the three sub-tables, one for each component, into the color conversion system Lee to provide an equal number of bits for each color components in order to facilitate the color conversion process.

Response to Arguments

Applicant's arguments with respect to claims 21-40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Yoo et al (6,333,762) disclose (Figs. 10-12) a color conversion apparatus for converting an input color being in a first color space (R, G, B) to an output color being in a second color space (R, G, B), wherein both the input color and the output color are in (RGB) format.

-Tamagawa (6,522,778) discloses (Fig. 2) both the input color (R, G, B)and the output color are in (R0, G0, B0) format.

-Read (5,272,468) discloses (Fig. 2) a color conversion apparatus using color look-up-tables (LUTs).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUU MATTHEW whose telephone number is (571) 272-7663. The examiner can normally be reached on Flexible Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JACK KEITH can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. Luu

MATTHEW LUU
PRIMARY EXAMINER